Space to Village

SERVIR Science Applications to Support Informed Decisions

Africa Flores

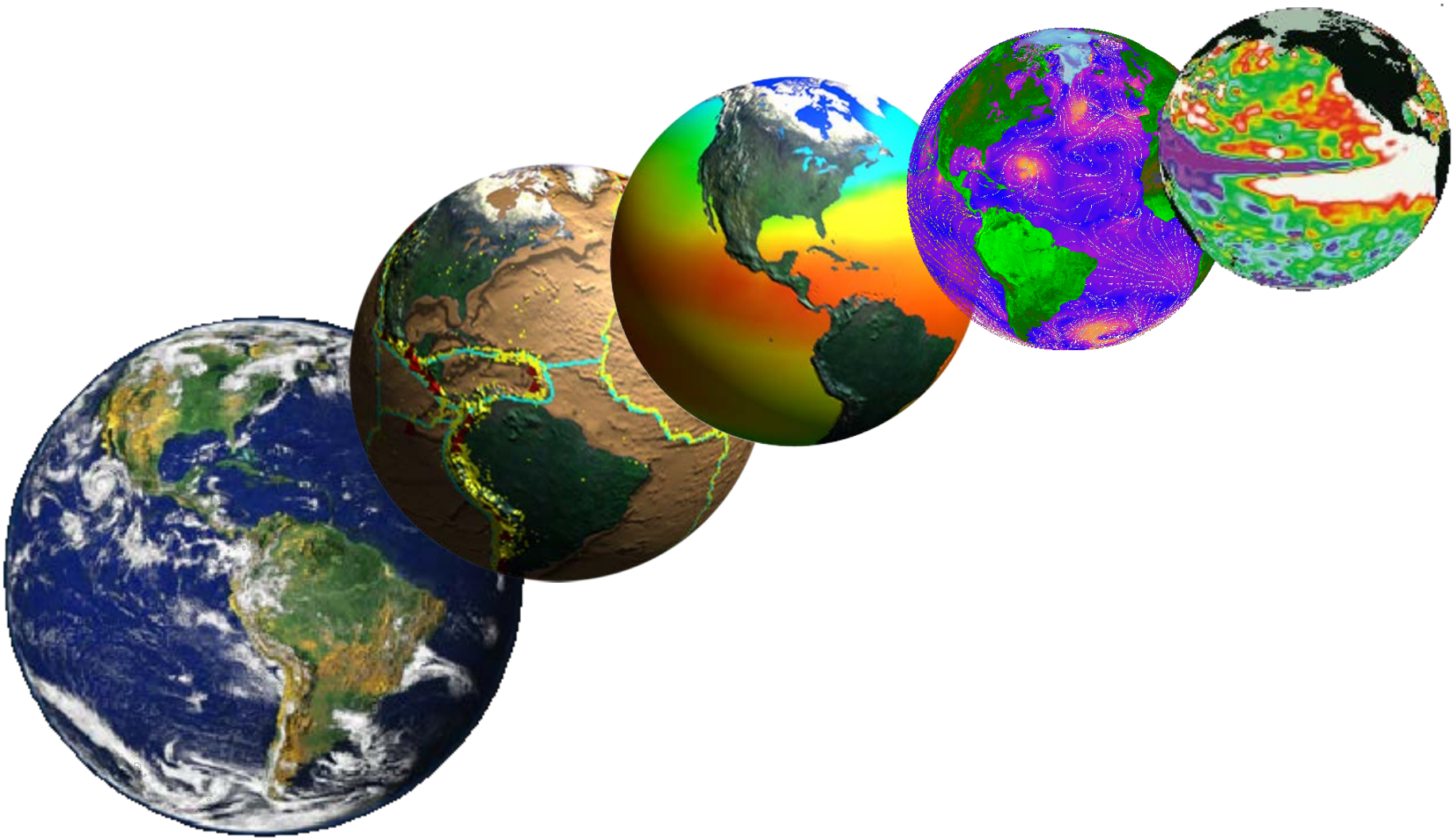
SERVIR Eastern and Southern Africa POC

SERVIR

USAID FROM THE AMERICAN PEOPLE | NASA | RCMRD | ICIMOD | adpc

NASA Earth Science Missions

SERVIR



USAID
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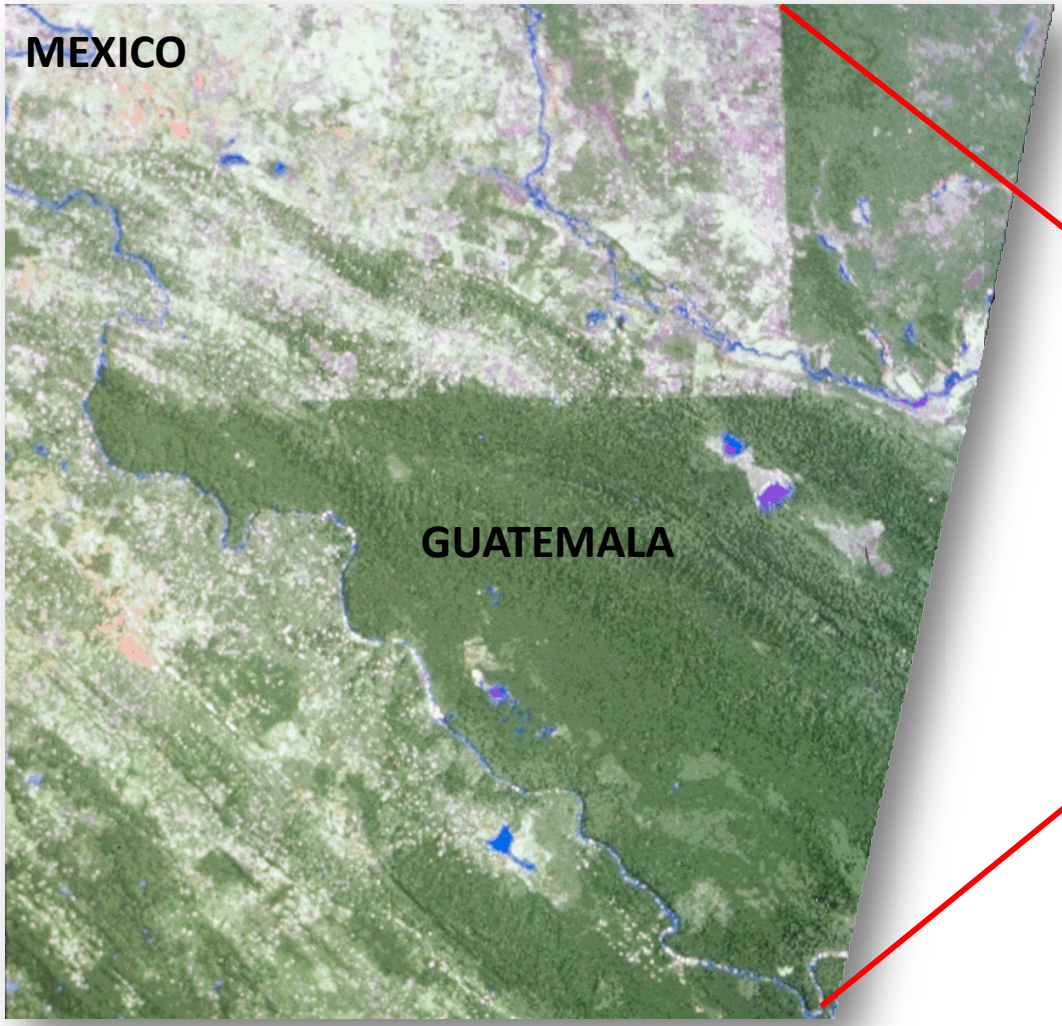
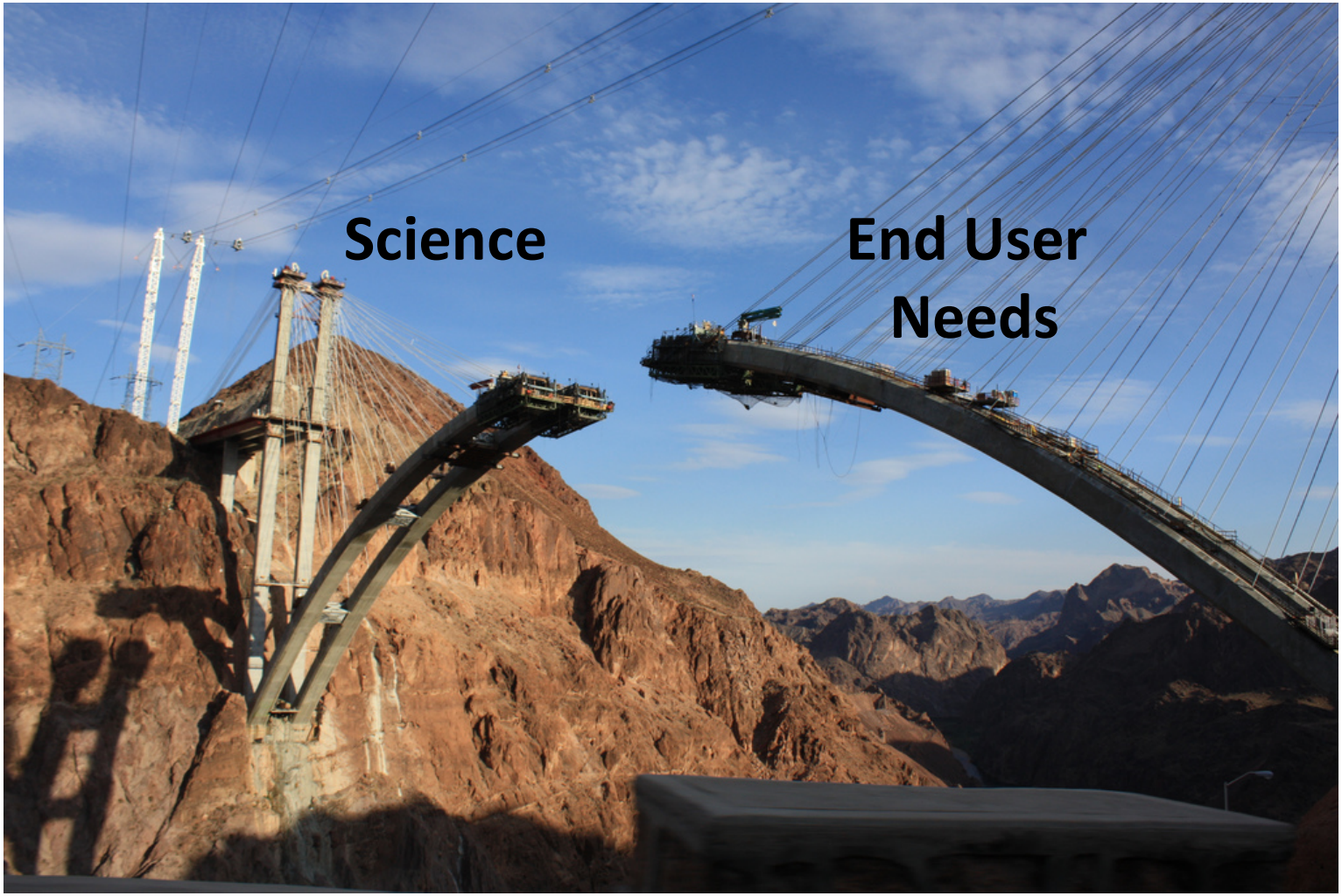
NASA

International Boundary from Space: Landsat



USAID FROM THE AMERICAN PEOPLE

Bridging Science with End User Needs Through Applied Sciences



Courtesy: alifayre

Background – About SERVIR

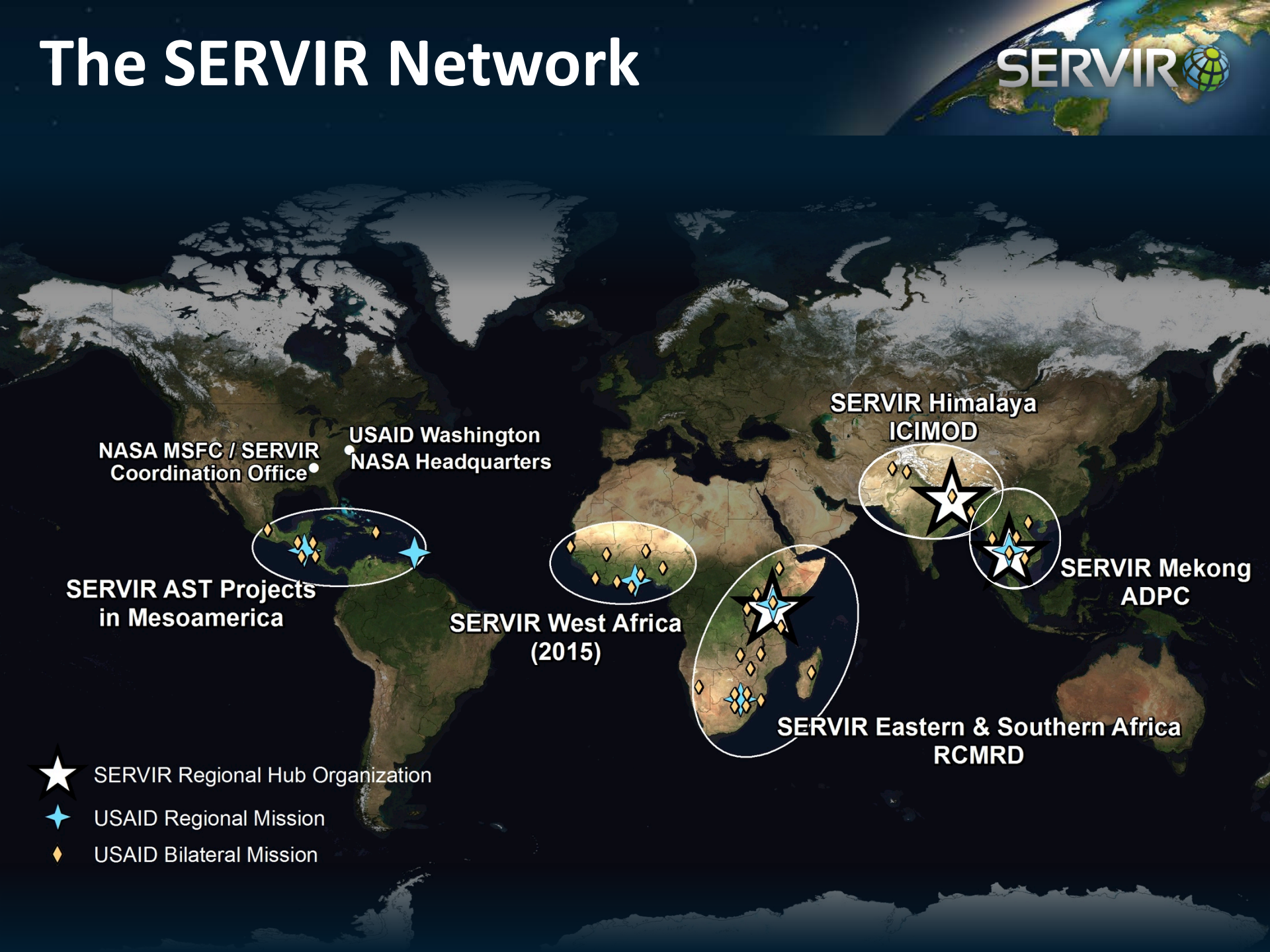
Goal: Improve environmental management and resilience to climate change

Objective: Increased integration of earth observation information and geospatial technologies into development decision-making

Approach: Leverage agency strengths for impact

NASA and USAID pledge to advance international development with science and technology.
MOU Signed April 25, 2011

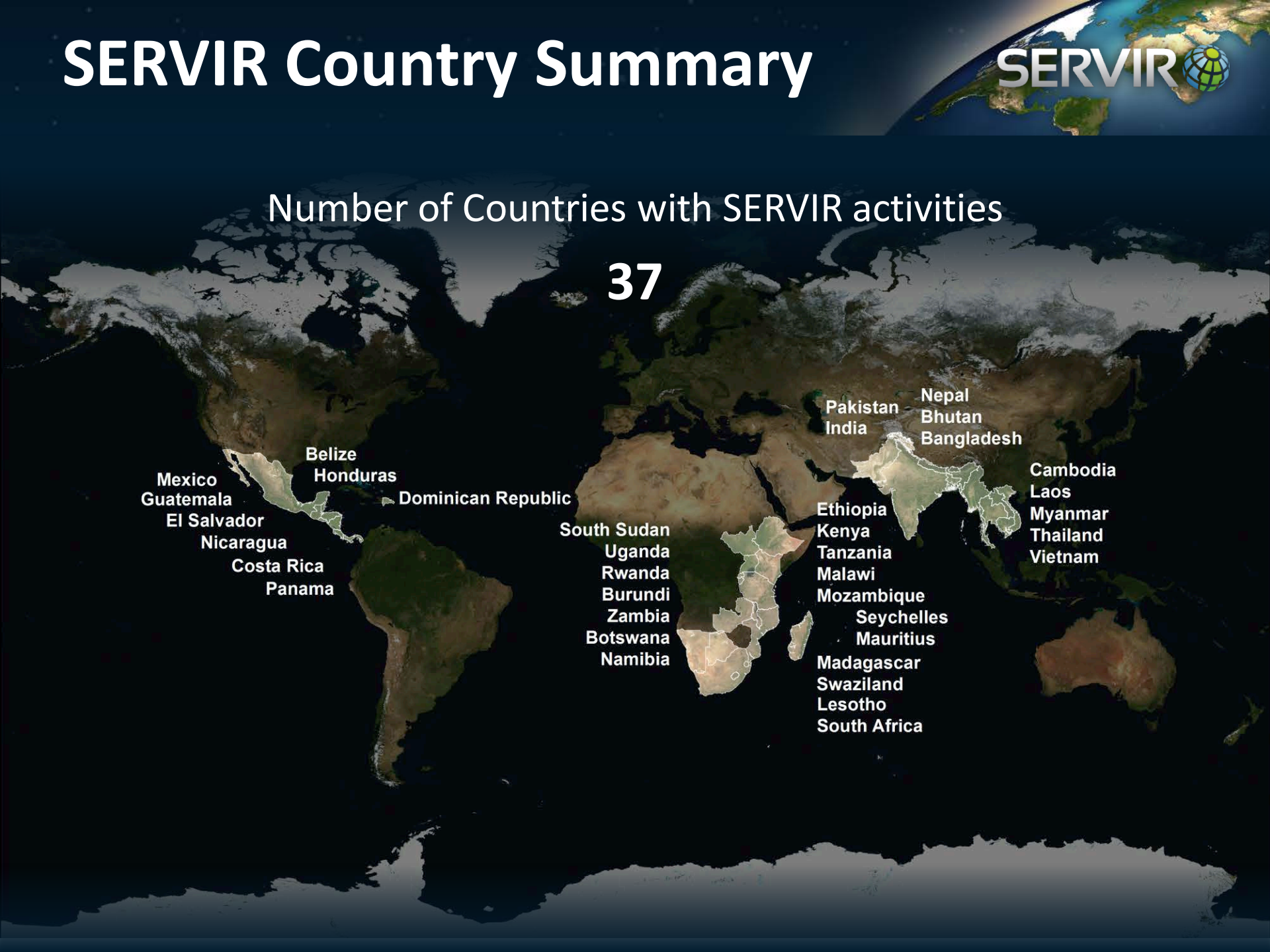
The SERVIR Network



SERVIR Country Summary

Number of Countries with SERVIR activities

37



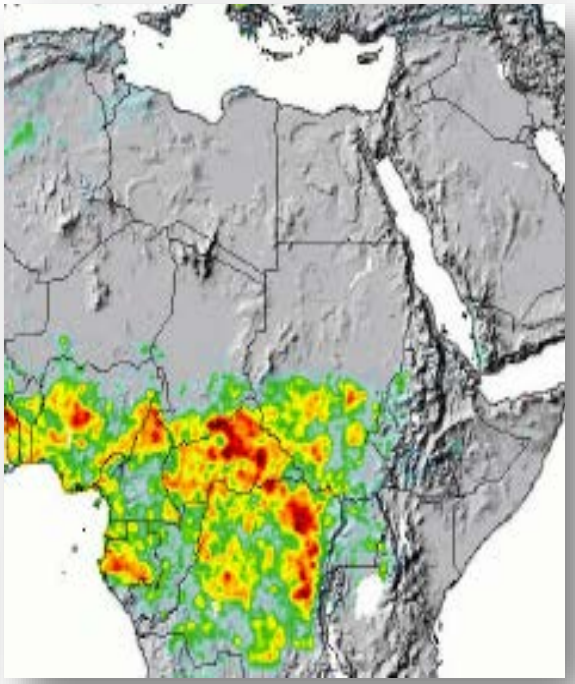
Cumulative Results

4	Regions
37	Countries
62	Tailored decision-support tools
322	Institutions with increased capacity
28	Small grants/small scale applications
120	University fellows from 24 countries
2,000+	People trained
2 M+	Online map requests

http://servircatalogue.net

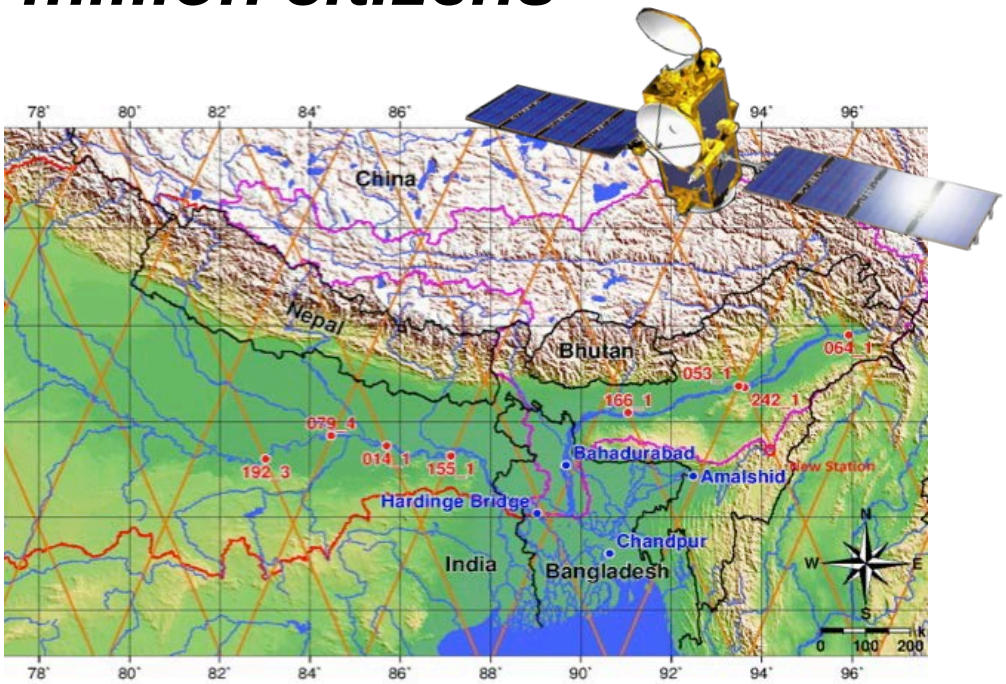
What We Do

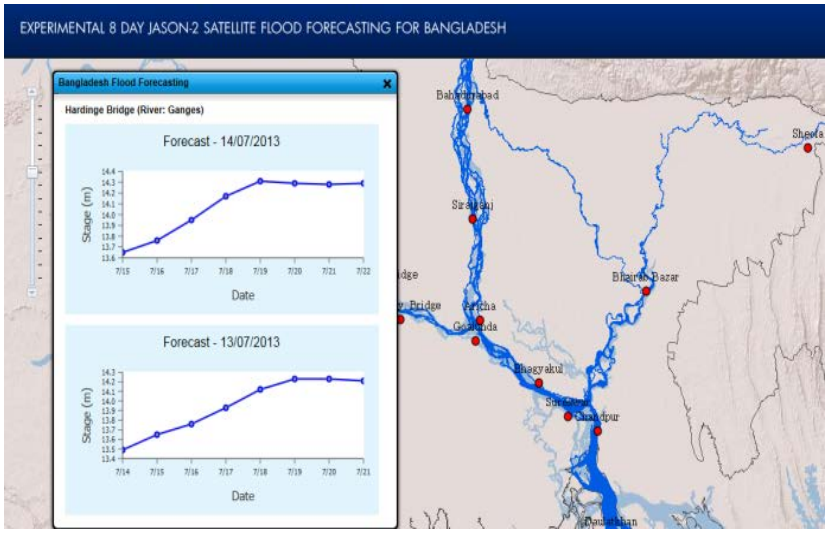
- Improved Access to Data, Models, Online Maps, Visualizations
- Strengthening the Capacity of Regional Institutions, Stakeholders, and Youth
- Decision Support Tools and Services
- Partnerships



Flood early warning system in Bangladesh

From 3 days to 8 days of warning time for 160 million citizens





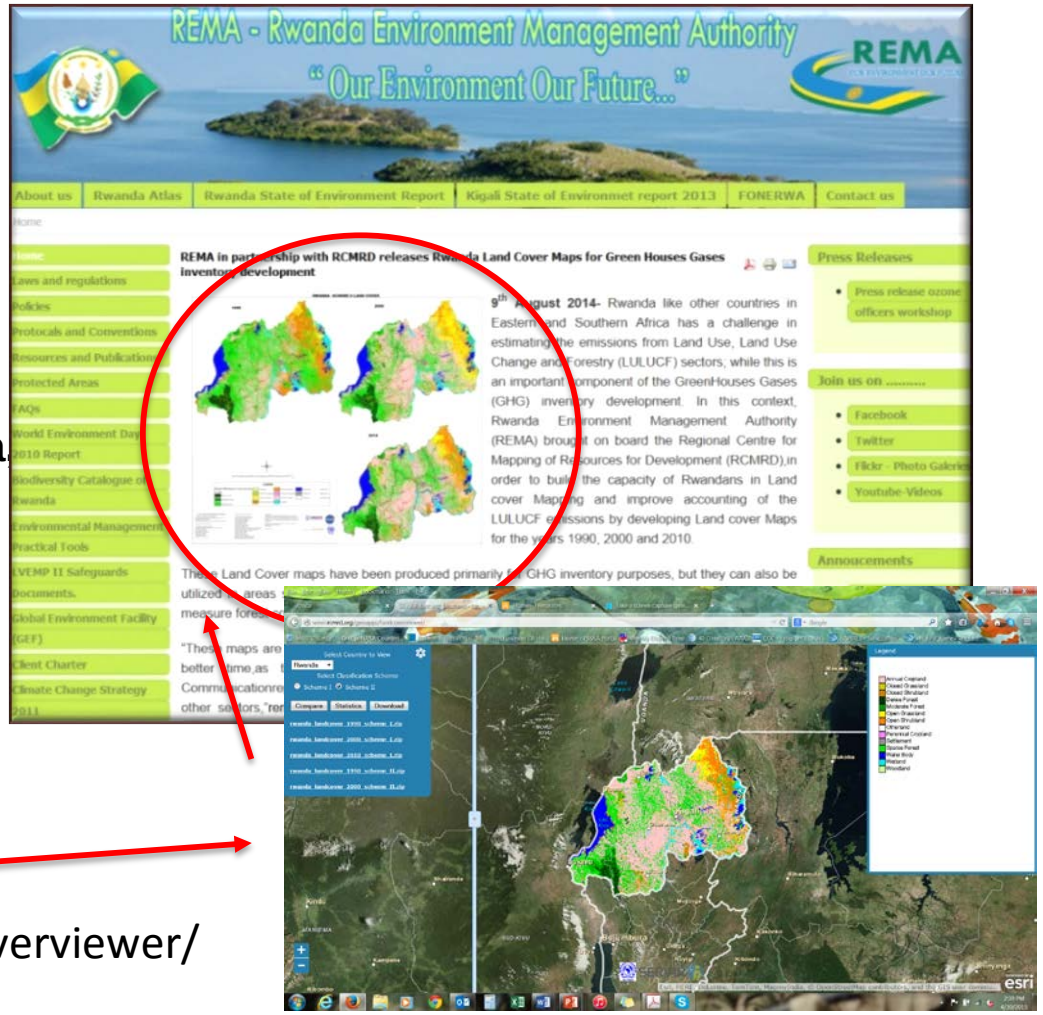
In August 2014, the SERVIR JASON-2 system accurately predicted a large flood wave earlier than the government's standard operational system

Land Cover Mapping for GHG

GHG Mapping

- Harmonize, IPCC standards Land Cover maps in 6 African countries co-developed and shared online

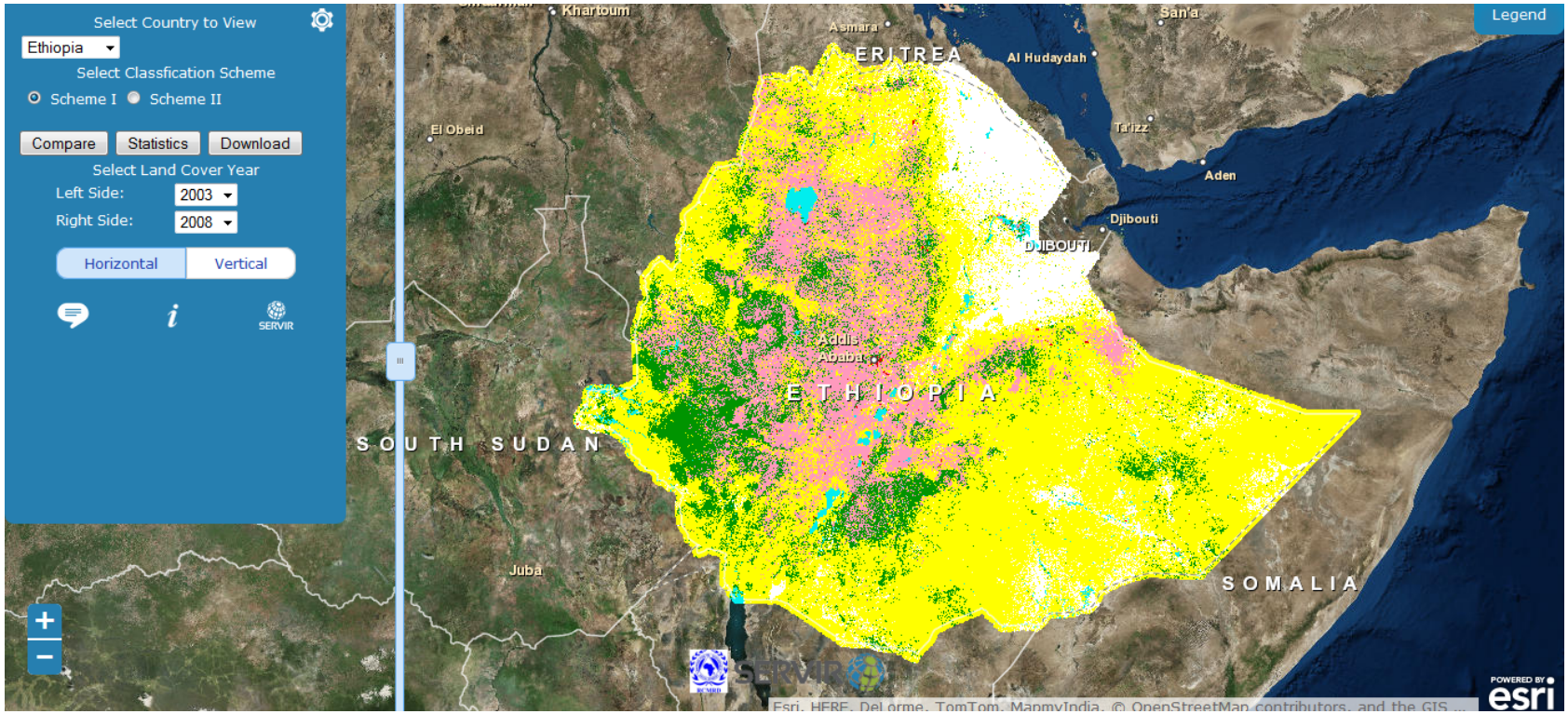
- Countries supported:
  - **Botswana, Tanzania, Zambia, Rwanda, Namibia, Malawi**
  - RCMRD and SERVIR co-created GHG emissions inventory assessments by generating Landsat-derived land cover maps



http://servir.rcmrd.org/geoapps/landcoverviewer/

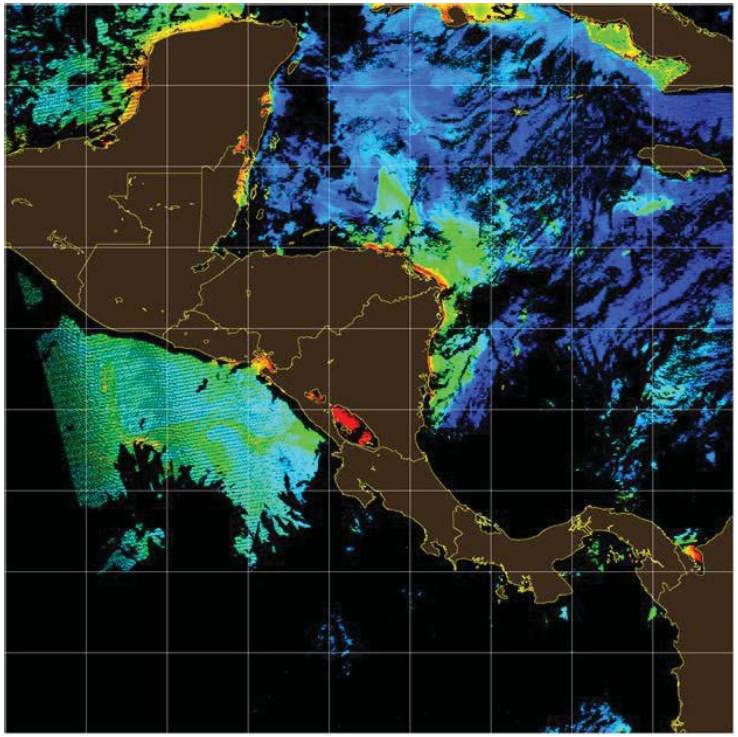
Land Cover Mapping for GHG

- Land Cover maps for 6 countries E. Africa
- Data is open, free, and downloadable



http://servir.rcmrd.org/geoapps/landcoverviewer/

Algal Bloom Tool

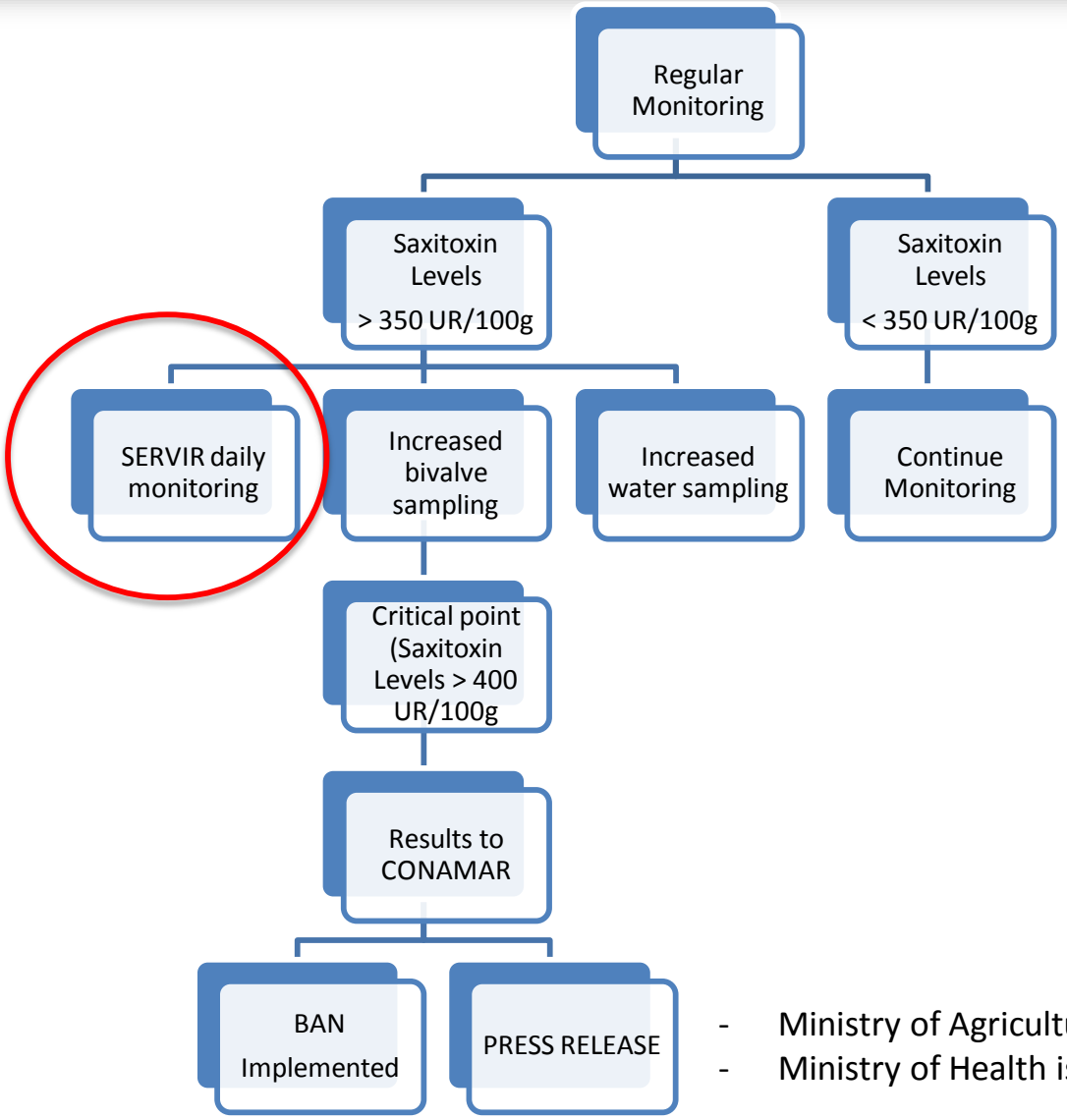


SERVIR Map From 12/07/14 (Red patches indicate surface water fluorescence). Source: MSI Report SERVIR External Evaluation

Preliminary Findings:

- El Salvador Ministry of Environment checks the SERVIR Algal Bloom map daily
- SERVIR map is used over two other similar products
- The tool helps to determine if further testing of shellfish is needed and influences government response

Science and Policy in Action:



- Daily SERVIR monitoring
- Monthly bivalve sampling
- Monthly water sampling

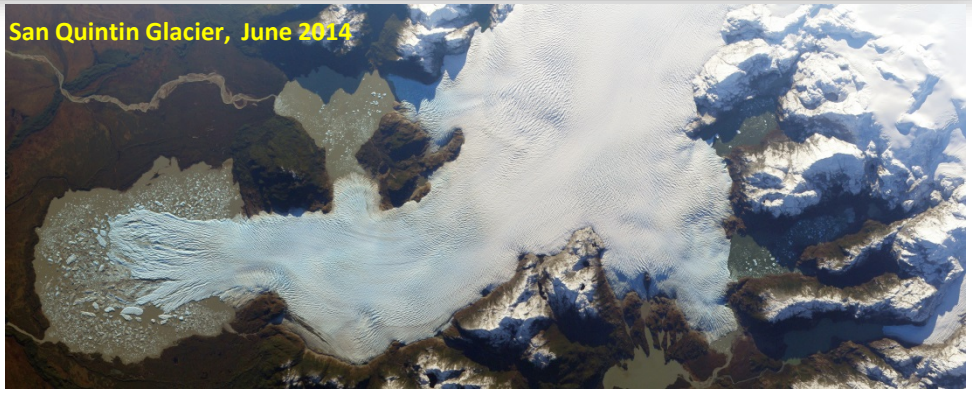
CONAMAR
- MARN
- LabTox Universidad of El Salvador

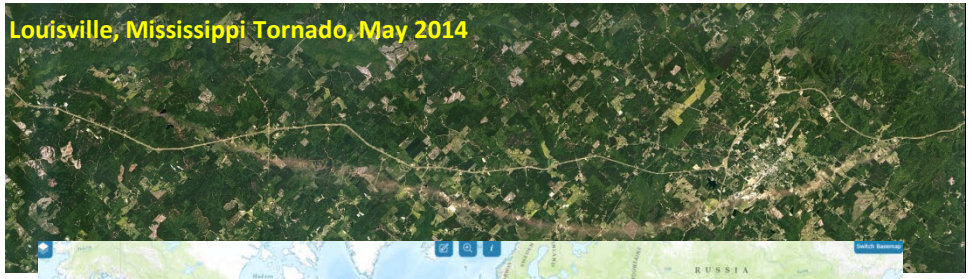
- Ministry of Agriculture ISSUES BAN
- Ministry of Health is informed

ISERV: Earth Observation from the International Space Station

International Space Station SERVIR Environmental Research and Visualization System (ISERV):

- Mounted in Window Observational Research Facility (WORF)
- Views Earth via Destiny Lab Window
- 18 km x 12 km footprint
- 5-meter resolution
- Visible spectrum images
- 3 frames per second





http://www.servirglobal.net/mapresources/iserv/

Contact info: Jaganathan.ranganathan@nasa.gov/256-961-7092

Decision Tools for Targeting and Evaluating and Forest Conservation & REDD+ Policies in LAC

Principle Investigator: Allen Blackman, Resources For the Future

Targeting Tool

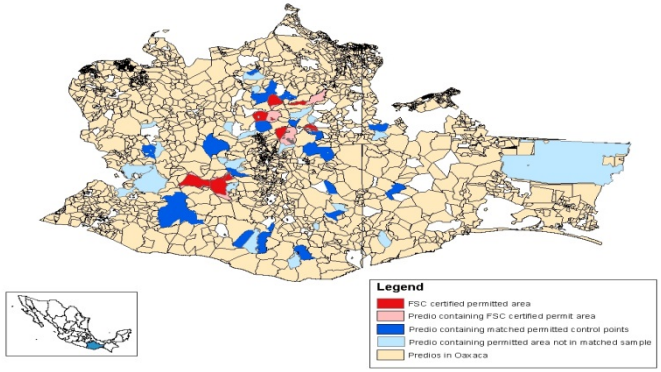
- **What is it?** A web-based, user-friendly, interactive computational tool
- **What does it do?** Identifies locations where forest conservation and REDD+ policies get the greatest conservation "bang-for-the-buck"?
- **How?** Uses detailed GIS data on variation across space of deforestation risk, provision of forest ecosystem services (carbon, biodiversity, hydrology) and conservation costs
- **Status: *Beta-version***: http://conservationroi.net

  Web-launch and training workshops in 2015

Evaluation tool kit

- **What is it?** Downloadable data, how-to manual, and pilot studies
- **What does it do?** Measures the effectiveness of specific forest conservation policies (e.g., protected areas, forest certification) in stemming deforestation
- **How?** Compares deforestation in areas affected by the policy and similar unaffected areas
- **Status:** Complete except for pilot studies

  Web-launch and training workshops in 2015



CHIRPS Viewer – Precipitation data

In DEVELOPMENT

What is CHIRPS?

"Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS) is a 30+ year quasi-global rainfall dataset.
Spanning 50°S and 50°N (and all longitudes), starting in 1981 to near-present, CHIRPS incorporates 0.05° resolution satellite imagery with in-situ station data to create gridded rainfall time series for trend analysis and seasonal drought monitoring. "
http://chg.geog.ucsb.edu/data/chirps/

http://chirps.nsstc.nasa.gov/

More information about CHIRPS here:
http://pubs.usgs.gov/ds/832/pdf/ds832.pdf

Thank You!

Satellite Datasets Used

Satellite/Sensor Name	Projects Using Data
ALOS (Japanese) (PALSAR data) *	1*
AltiKa (French, Indian)	1
AMSR-E on Aqua *	3*
ASAR (European) Envisat	1
ASTER	3
Digital Globe constellation**	3
EO-1 Visible Imagery, 30-m	1
GPM (Launched-2014)	1
GRACE	2
ICESat (GLAS)*	1*
Jason-2	1
LANDSAT 5* and 7	8
LANDSAT 8	1
Meteosat (European)	2
QuikSCAT *	1*
Radarsat-2 **	3
SMOS (European)	1
SRTM	8
Terra and Aqua- MODIS	18
TRMM	10
VIIRS	8

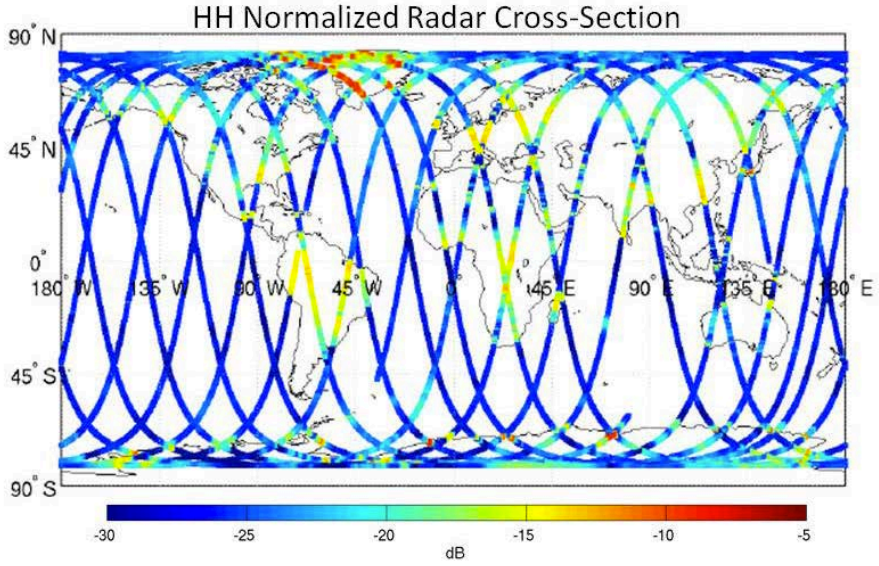
21 Satellites/Sensors Applied (WAS 19)

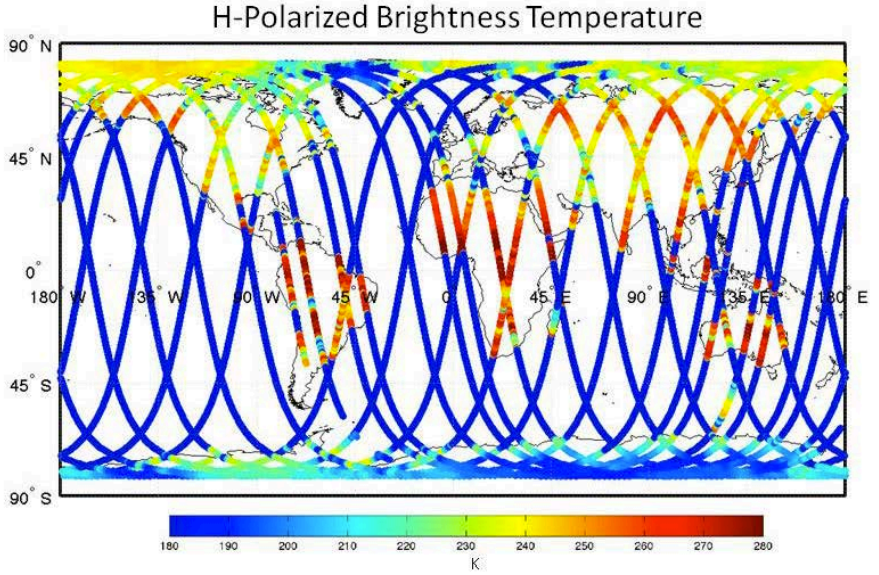
Planned Use of Satellites/Sensors	
SMAP (Launched-2015)	3
ICESat-2	1
Jason-3	1

Satellites/Sensors being Explored for Use	
OCO-2 (Launched-2014)	
ISS-RapidScat (Launched-2014)	
CATS (Launched-2015)	

■ Launched within the last year
* Satellite/sensor no longer producing data
** 5 Commercial Satellites in use through a unique data collection tasking agreement

NASA Soil Moisture Active-Passive (SMAP) First Light: February 27-28, 2015





SMAP will map global soil moisture daily. It will:

- Enhance our ability to monitor and predict natural hazards such as floods and droughts
- Help reduce uncertainties in predicting weather and climate
- Revolutionize our understanding of Earth's water, energy and carbon cycles